

1. Determine the horizontal and/or oblique asymptotes in the rational function below.

$$f(x) = \frac{6x^3 + 29x^2 - 5x - 100}{3x^2 + 10x - 25}$$

- A. Horizontal Asymptote of $y = 2.0$
 - B. Horizontal Asymptote of $y = 2.0$ and Oblique Asymptote of $y = 2x + 3$
 - C. Oblique Asymptote of $y = 2x + 3$.
 - D. Horizontal Asymptote of $y = -5.0$ and Oblique Asymptote of $y = 2x + 3$
 - E. Horizontal Asymptote at $y = -5.0$
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2. Determine the vertical asymptotes and holes in the rational function below.

$$f(x) = \frac{16x^3 + 64x^2 + 79x + 30}{12x^2 + x - 6}$$

- A. Vertical Asymptote of $x = 0.667$ and hole at $x = -0.75$
 - B. Holes at $x = 0.667$ and $x = -0.75$ with no vertical asymptotes.
 - C. Vertical Asymptotes of $x = 0.667$ and $x = -0.75$ with no holes.
 - D. Vertical Asymptote of $x = 1.333$ and hole at $x = -0.75$
 - E. Vertical Asymptotes of $x = 0.667$ and $x = -1.25$ with a hole at $x = -0.75$
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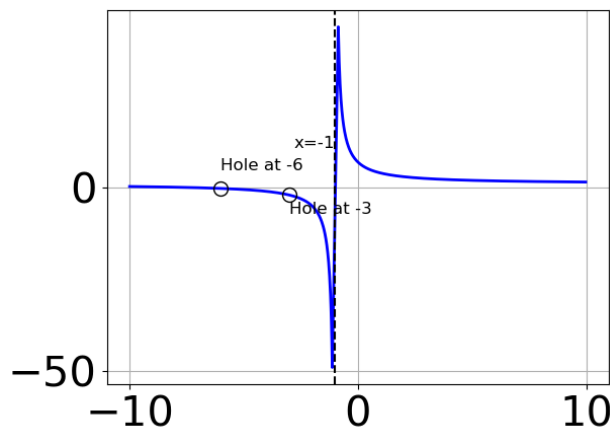
3. Determine the horizontal and/or oblique asymptotes in the rational function below.

$$f(x) = \frac{3x^2 - 7x - 20}{9x^3 + 18x^2 - 7x - 20}$$

- A. Horizontal Asymptote of $y = 0$
- B. Horizontal Asymptote of $y = 0.333$
- C. Horizontal Asymptote at $y = 4.000$

- D. Horizontal Asymptote of $y = 0.333$ and Oblique Asymptote of $y = 3x + 13$
- E. Oblique Asymptote of $y = 3x + 13$.

4. Which of the following functions *could* be the graph below?



- A. $f(x) = \frac{x^3 + 3.0x^2 - 40.0x - 84.0}{x^3 + 10.0x^2 + 27.0x + 18.0}$
- B. $f(x) = \frac{x^3 - 16.0x^2 + 81.0x - 126.0}{x^3 - 10.0x^2 + 27.0x - 18.0}$
- C. $f(x) = \frac{x^3 + x^2 - 44.0x - 84.0}{x^3 - 10.0x^2 + 27.0x - 18.0}$
- D. $f(x) = \frac{x^3 + 16.0x^2 + 81.0x + 126.0}{x^3 + 10.0x^2 + 27.0x + 18.0}$
- E. None of the above are possible equations for the graph.

5. Determine the vertical asymptotes and holes in the rational function below.

$$f(x) = \frac{6x^3 + 11x^2 - 5x - 12}{12x^2 + 25x + 12}$$

- A. Vertical Asymptotes of $x = -0.75$ and $x = -1.5$ with a hole at $x = -1.333$
- B. Vertical Asymptotes of $x = -0.75$ and $x = -1.333$ with no holes.

- C. Vertical Asymptote of $x = 0.5$ and hole at $x = -1.333$
 - D. Vertical Asymptote of $x = -0.75$ and hole at $x = -1.333$
 - E. Holes at $x = -0.75$ and $x = -1.333$ with no vertical asymptotes.
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6. Determine the horizontal and/or oblique asymptotes in the rational function below.

$$f(x) = \frac{6x^3 + 13x^2 - 13x - 30}{2x^2 + 3x - 9}$$

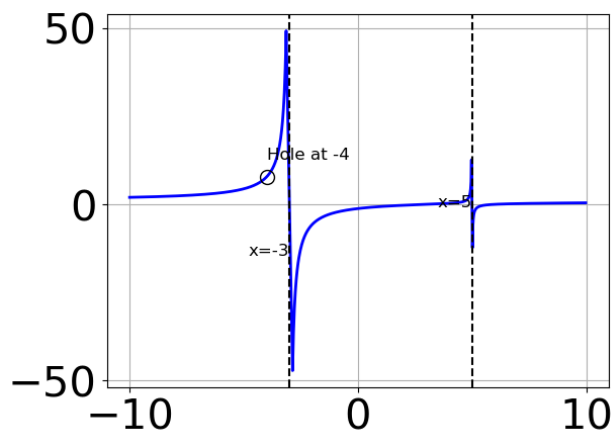
- A. Horizontal Asymptote of $y = -3.0$ and Oblique Asymptote of $y = 3x + 2$
 - B. Oblique Asymptote of $y = 3x + 2$.
 - C. Horizontal Asymptote of $y = 3.0$
 - D. Horizontal Asymptote of $y = 3.0$ and Oblique Asymptote of $y = 3x + 2$
 - E. Horizontal Asymptote at $y = -3.0$
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7. Determine the horizontal and/or oblique asymptotes in the rational function below.

$$f(x) = \frac{6x^2 + 29x + 20}{12x^3 + 76x^2 + 145x + 75}$$

- A. Horizontal Asymptote of $y = 0.500$
 - B. Oblique Asymptote of $y = 2x + 3$.
 - C. Horizontal Asymptote of $y = 0$
 - D. Horizontal Asymptote of $y = 0.500$ and Oblique Asymptote of $y = 2x + 3$
 - E. Horizontal Asymptote at $y = -4.000$
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8. Which of the following functions *could* be the graph below?



A. $f(x) = \frac{x^3 + 5.0x^2 - 18.0x - 72.0}{x^3 - 2.0x^2 - 23.0x + 60.0}$

B. $f(x) = \frac{x^3 - 5.0x^2 - 18.0x + 72.0}{x^3 + 2.0x^2 - 23.0x - 60.0}$

C. $f(x) = \frac{x^3 + 12.0x^2 + 45.0x + 54.0}{x^3 - 2.0x^2 - 23.0x + 60.0}$

D. $f(x) = \frac{x^3 - 2.0x^2 - 45.0x + 126.0}{x^3 + 2.0x^2 - 23.0x - 60.0}$

E. None of the above are possible equations for the graph.

9. Determine the vertical asymptotes and holes in the rational function below.

$$f(x) = \frac{9x^3 - 28x - 16}{9x^2 + 6x - 8}$$

- A. Vertical Asymptote of $x = 1.0$ and hole at $x = -1.333$
- B. Vertical Asymptote of $x = 0.667$ and hole at $x = -1.333$
- C. Vertical Asymptotes of $x = 0.667$ and $x = -0.667$ with a hole at $x = -1.333$
- D. Holes at $x = 0.667$ and $x = -1.333$ with no vertical asymptotes.
- E. Vertical Asymptotes of $x = 0.667$ and $x = -1.333$ with no holes.

10. Determine the vertical asymptotes and holes in the rational function below.

$$f(x) = \frac{12x^3 + 53x^2 + 73x + 30}{12x^2 + x - 6}$$

- A. Vertical Asymptotes of $x = 0.667$ and $x = -1.667$ with a hole at $x = -0.75$
 - B. Vertical Asymptotes of $x = 0.667$ and $x = -0.75$ with no holes.
 - C. Vertical Asymptote of $x = 0.667$ and hole at $x = -0.75$
 - D. Holes at $x = 0.667$ and $x = -0.75$ with no vertical asymptotes.
 - E. Vertical Asymptote of $x = 1.0$ and hole at $x = -0.75$
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